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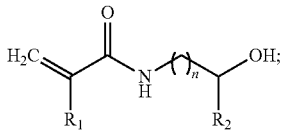
tgtgcgttca aagactcgat 20

1. A method for enriching and detecting microorganisms in a biological sample, comprising the following steps: a) collecting the biological sample; b) filtering the sample through Sterile Acrodis® White Blood Cell Syringe Filter (PALL) or a polymer-modified substrate, human-derived nucleated cells in the sample are captured or separated by the filter or polymer-modified substrate and the microorganisms in the sample pass or flow through the filter or polymer-modified substrate into filtrate; and c) detecting the microorganisms present in the filtrate; wherein the nucleated cells include one or more of erythroblasts, leukocytes and cancer cells; the polymer is prepared by the polymerization of one or more monomers having the structure of formula (1):



(1)

wherein R_1 is independently selected from the group consisting of hydrogen, methyl, ethyl, hydroxyl, C_{1-12} alkyl, phenyl; R_2 is independently selected from the group consisting of hydrogen, methyl, ethyl, C_{1-6} alkyl, amino, phenyl; and n is an integer of 1 to 5.

2. The method of claim **1**, wherein the human-derived nucleated cells are leukocytes.

3. The method of claim **1**, wherein the microorganisms are bacteria.

4. The method of claim **1**, wherein the microorganisms are fungi.

5. The method of claim **1**, wherein the retention rate of the microorganisms in the filtrate is above 65%.

6. The method of claim **5**, wherein the retention rate of the microorganisms in the filtrate is above 80%.

7. The method of claim **5**, wherein erythrocytes in the sample pass or flow through the polymer-modified substrate into the filtrate, and the retention rate of the erythrocytes is above 80%.

8. The method of claim **5**, wherein platelets in the sample pass or flow through the polymer-modified substrate into the filtrate, and the retention of the platelets is above 80%.

9. The method of claim **5**, wherein fibrinogens in the sample pass or flow through the polymer-modified substrate into the filtrate, and the retention rate of the fibrinogens is above 80%.

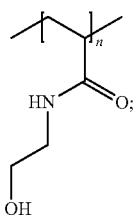
10. The method of claim **1**, wherein the detection rate of the microorganisms in the filtrate is 2 fold higher than the samples without filtration.

11. The method of any of claim **10**, wherein the detection rate of the microorganisms in the filtrate is 40 fold higher than the sample without filtration.

12. The method of claim **1**, wherein the monomer of formula (1) is N-hydroxyethyl acrylamide, N-(2-hydroxyethyl) acrylamide, NHEMAA, and N-(2-Hydroxyethyl) acrylamide, HEAA.

13. The method of claim **1**, wherein the polymer further comprises an additional monomer, which is butyl methacrylate, and the monomer of formula (1) is copolymerized with the additional monomer to form a copolymer.

14. The method of claim **1**, wherein the polymer has the structure of formula (2):



(2)

wherein n is an integer of 10 to 50.